

The role of task representation in academic reading-into-writing

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Academic writing usually begins with an assignment!

For many students, beginning to write is preceded by reading their assignment brief and building an understanding of what their final text will look like: **a task representation.**

This presentation will

- Briefly report some of the findings of an eye-tracking study on an academic reading-into-writing task
- Examine the role that task representation played in shaping the reading processes of participants in the study
- Consider what this means for how we teach academic writing.

Task Representation

“When confronted with any academic writing task, the first thing a student must do is create an understanding of what skills, products, and processes the task requires and make a plan of action that will lead to a written product that appropriately fulfils the writing task.”

Wolfersberger (2008:73)

Skills / competencies



**Process of applying
skills**



My
essay

The motivations for my study

Undergraduates often arrived ill-equipped for academic study, especially extensive reading skills

L1 / L2 categorisation was often irrelevant or unhelpful

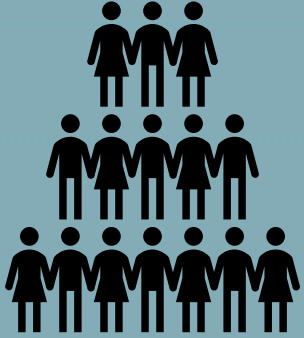
First written assignment often proved to be the crunch point that prompted new undergraduates to seek help

My research questions

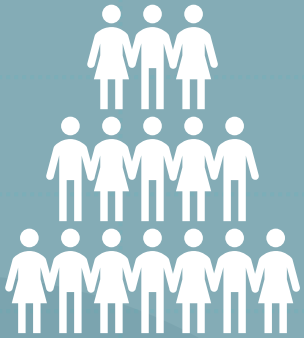
1. What are the **characteristics of reading** during an academic reading into writing task?
2. What are the **similarities and differences** between the way **first year undergraduates and third year/postgraduate** participants tackle an academic reading into writing test task?
3. What are the **similarities and differences** between the way **high and low scoring** participants tackle an academic reading into writing test task?

Research design

15 x Yr1
undergrads



15 x Yr3 undergrads
/ postgrads



Participants: mixture of native and non-native speakers (C1 level) No statistically significant difference between NS/NNS task scores.

Source text sentences rated for relevance by 3 expert raters



2 sources of information, with graphics
Approx. 600 words in total

Task - 60 mins

- **Identify** the **problem** and its **causes**
- **Summarise** the solutions
- **Preferred solution** with justification

Written answer (approx. 250 words)

Answers double marked based on **content, organisation and language**



Eye-track reading

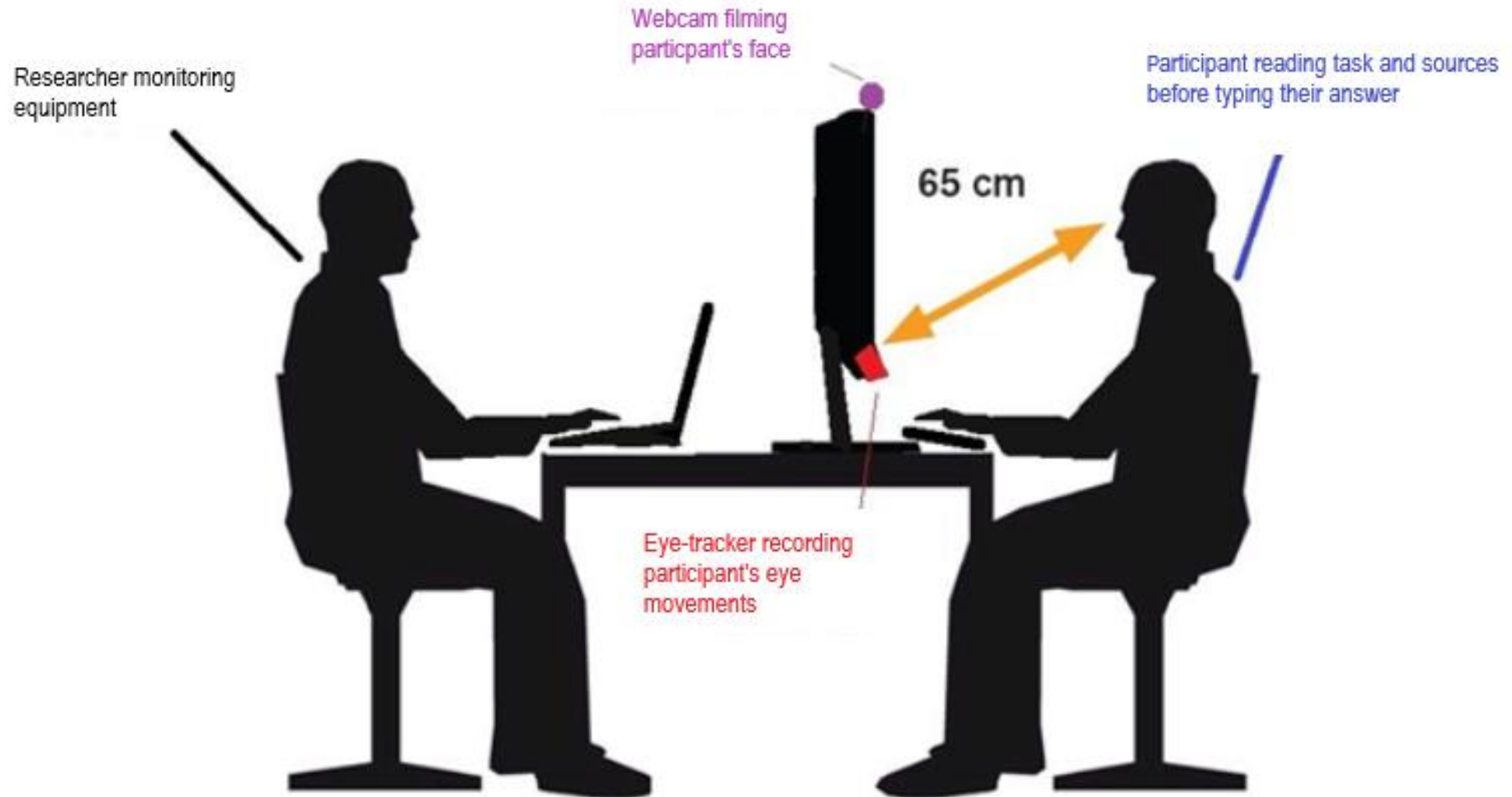


Stimulated recall



Cognitive processing questionnaire

Eye-tracking reading



There are 5 pages below. Page 1 contains the essay task instructions. Pages 2 & 3 contain the first text and pages 4 & 5 contain the second text. You need to read both texts to complete the task. Use the text box on the right to begin making notes about your essay and / or writing your essay.

Remember, to move between pages click on the triangles at the bottom of the screen. You can move between pages as often as you like.

Health and Safety Report

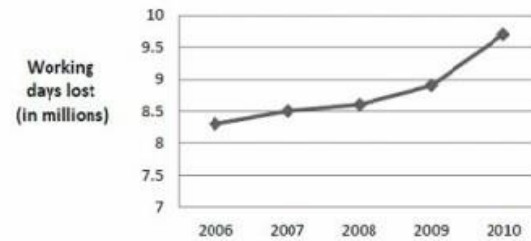
Many working days are lost every year due to work-related stress. By taking action to reduce the problem, employers can help create a more productive, healthy workforce and save money. Two specific approaches are outlined below and on the following page.

The Health and Safety Executive (HSE) has designed the Management Standards approach to help employers manage the causes of work-related stress. This approach requires management and staff to work together to set up a stress policy relating to six areas of work and to improve unsatisfactory areas so that a long-term positive effect on employees' well-being can be achieved.

Continued...

Page 2

Working days lost due to work-related stress



Diagram

Source text area

Click on triangles 1 - 5 to move to that page.



Move page controls

Screen instructions

Please type your name in the box

Please type your answer in the box below

Type your answer here

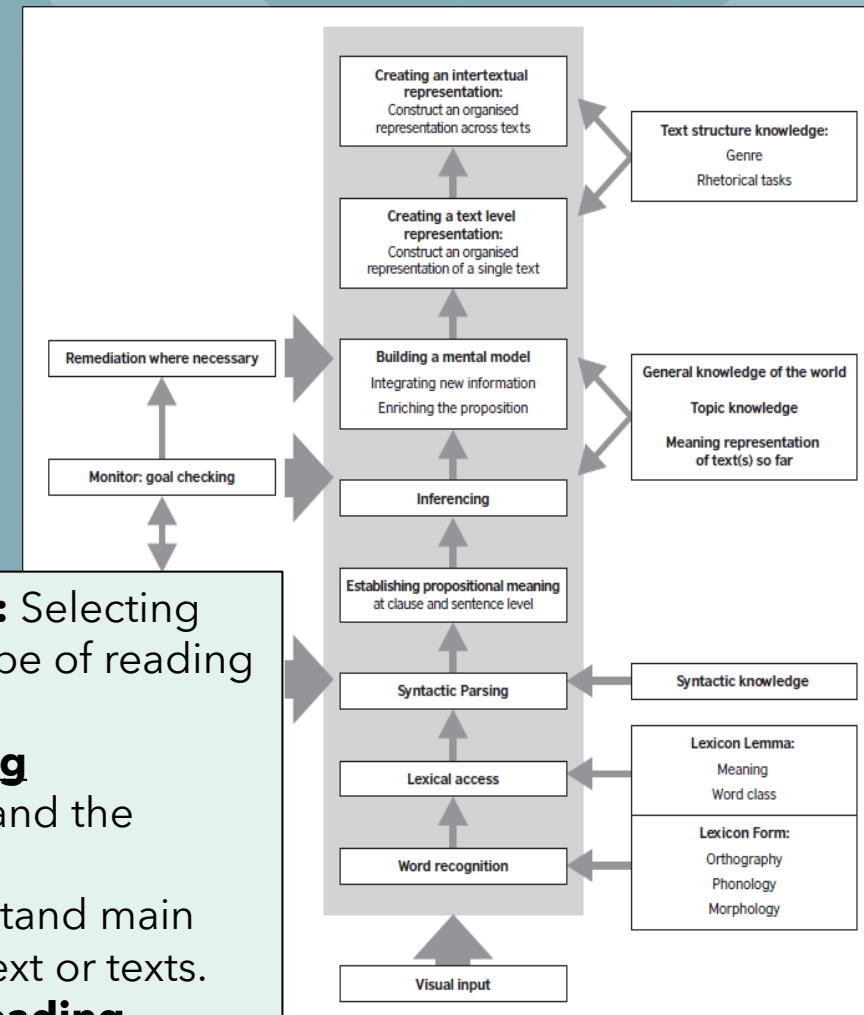
Area for typing answer
Own work

Submit

Chan's cognitive processes in reading-into-writing (Chan, 2013:73)

Cognitive processes	Working definitions
Task representation	Create an initial understanding of the task (e.g. the overall purpose of the test/assignment, structure of the test, time constraints, scoring criteria, word length, topic, genre and intended reader, rhetorical functions to perform)
Marco-planning	Plan for writing goals, content and organisation of the text, etc. Identify major constraints (genre, readership, language resources, etc.)
Higher-level reading	Careful reading to create textual and / or intertextual representations) Search reading (e.g. select ideas which are relevant to the task context to put in the new text from the source texts based on a set of criteria perceived as appropriate)
Organising	Organise the ideas to put in the next text (e.g. prioritize ideas in terms of relevance or importance, re-order, re-combine, delete, categorise, create new structure, etc.)
Connecting and generating	Generate links between ideas or new meaning by connecting ideas/discourse features provided in the source texts with their own knowledge.
Micro-planning	Plan for the part of the text that is about to be produced
Translating	Translate abstract ideas into linguistic forms
Monitoring and Revising	Higher-level: meaning and coherence Lower-level: accuracy or range of grammar, vocabulary and sentence structure, plagiarism

Khalifa and Weir's model of reading (Khalifa and Weir, 2009:43)



Goal setter: Selecting appropriate type of reading

Careful reading

Local: Understand the sentence
Global: Understand main ideas, overall text or texts.

Expeditious reading

Local: Scan / search specifics
Global: Skim for gist
Search for main ideas

A little about eye-movements in reading

- Eye-tracking has been a key tool in helping to us to understand much of what is known about reading (Rayner & Pollatsek, 1989)
- Reading is broken into **fixations** and **saccades**, rather than a smooth pursuit of the text (Starr and Rayner, 2001)
- In adult reading, **fixations** (pauses) usually last about a **quarter of a second** (250 ms) and occur, on average, every 8 characters in careful reading. **Saccades**, or jumps to the next fixation usually last about **40 ms** (Rayner, Juhasz and Pollatsek, 2005:81)
- Not all movements go forward through the text. **About 15%** of fixations **move back** to earlier parts of the word, sentence or text. These are called **regressions** (Holmqvist, Nyström, Andersson, Dewhurst, Jarodzka and Van de Weijer, 2011)

An example of an eye-tracking recording

This site was designed with the **WIX.com** website builder. Create your website today. [Start Now](#)

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Text A

Text B

Text C

More Computer Screen Space Improves Productivity

The secret to more efficiency in the office may be just a few inches away. A recent study suggests that more computer screen space can significantly improve work productivity.

The study involved office workers of different levels of ability. The first group used standard 18-inch screen monitors. The second group tried two different monitor configurations. One of these configurations was a combination of two 20-inch screen monitors. The second configuration was a single 24-inch widescreen monitor. First, researchers timed both groups as workers did basic editing tasks. Then, they compared the performance of both groups. Results showed that workers using double 20-inch and single 24-inch screen monitors worked about twice as fast as the other workers.

Researchers noticed that double and widescreen monitors performed differently according to task type. The 24-inch widescreen configuration offered the best results for text-editing tasks, such as cutting and pasting. In comparison, the dual 20-inch configuration proved to be the best option for editing information in grids and tables. Workers' level of expertise was also a distinguishing factor. Less-experienced workers benefited the most from using 24-inch widescreen monitors. This suggests that larger monitors can help reduce the productivity gap between novice and experienced office workers.

Two basic reasons account for the results of the study. First, editing jobs usually involve checking multiple pages of text or data at the same time. When more screen space is available, users can view several document pages simultaneously. Because workers in the second group spent less time going back and forth between pages, they were able to work faster than participants in the first group. Finally, workers in the second group reported that the larger screens made editing feel less tiresome. It appears that the increased comfort helped them stay focused for longer periods of time, thus increasing their productivity.

Classifying different types of reading

Using measures from eye-tracking literature an algorithm was developed which examined the coordinates of each fixation in relation to the previous fixation and used pooled scoring to classify fixations as representing 2 main types of reading...

Careful reading

- Eye-movements proceeded sequential through the text at intervals of less than 16 character spaces.
- Regressions accounted for less than 25% of eye-movements.
- No long jumps backwards or forwards through the text (except movements from the end of one line to the beginning of the next line)

Selective reading

Fixation patterns which did not "fit" the prescribed pattern for Careful reading

RQs, methods and measures – a recap

	Reading-into-writing task	Participants
RQ1	Characteristics of reading	All participants (30 participants)
RQ2	Differences between the way the task was tackled by...	15 x less experienced (1 st year UG) 15 x more experienced (3 rd year UG and PG)
RQ3	Differences between the way the task was tackled by...	5 x highest scoring 5 x lowest scoring

Stimulated recall	Eye-tracking data	Cognitive processing questionnaire
Based on Chan's cognitive phases in reading-into-writing	Distribution of attention (fixations) on task instructions, source texts, own work.	Based on Chan's cognitive phases in reading-into-writing
	Distribution of attention (fixations) on sentences of the source text according to relevance	
	Types of reading - based on Khalifa and Weir's model of reading and ET literature	



Findings for RQ1: Characteristics of reading

Distribution of attention on task instructions/ source text / own work

Task instructions	Source texts	Own work	Other
6%	37% text, 3% diagrams	47%	7%

SR and questionnaire data suggested that participants adopted strategies to help them decide what to include and for some participants, their understanding of the task continued to change and develop as they worked.

Distribution of attention according to sentence relevance

	Less relevant	Relevant	Highly relevant
No. of fixations / word	116 (27%)	134 (32%)	172 (41%)

Moderate correlation between relevance and attention but stimulated recall also suggested that a failure to understand some sentences (those with more abstract concepts) had a role to play

Patterns of reading

	Eye-movements indicative of careful reading	Eye-movements indicative of selective reading
% of fixations on written source texts	29%	71%

Most of the careful reading took place in the first 6 minutes of the task.

Findings for RQ2: Differences between less / more experienced participants

15 participants per group

Distribution of attention on instructions/ source text / own work

% of fixations for	Task instructions	Source texts	Own work	Other
Y1 UG	6%	40% text, 3% diagrams	44%	7%
Y3 UG /PG	6%	34% text, 4% diagrams	50%	6%

Distribution of attention according to sentence relevance (per word)

% of fixations per word	Less relevant	Relevant	Highly relevant	Pearson's correlation
Y1 UG	28%	31%	42%	r=.484 (moderate)
Y3 UG /PG	27%	32%	41%	r=.503 (moderate)

Patterns of reading

% of fixations on written source texts	Eye-movements indicative of careful reading	Eye-movements indicative of selective reading
Y1 UG	31%	69%
Y3 UG /PG	26%	74%

These differences between the groups were not statistically significant

Role of experience: Patterns of reading

The more experienced group (Y3 UG/PG) made **twice as many references to reading for gist** as their less experienced counterparts. This may help explain their increased reliance on selective forms of reading (74% versus 69% for Y1 UG)

"I was, at first, I was running through the lines, and I was like, what is it about?" (P38)

Reported that the first read through is to "get a feel for what I'm going to be reading about" (P42)

When asked about skipping sections of text "Yes, I just thought well, I more or less know where this is going, kind of thing. So, I don't need to read this". (P40)

Role of experience: editing own work

The Y3 UG/PG (more experienced group) made almost **twice as many comments about high-level revising**. Most of these comments centred around **cohesion and coherence**.

"No, there's definitely a much better way to write that". (P52)

"It just didn't sit well with me because I realized I had said there were two different approaches but actually, I'd only written one paragraph, so I needed to split it up... I split it up and changed it around" (P41)

Findings for RQ3: Differences between low / high scoring participants

5 Lowest scorers (3 x Y1 UG and 2 x Y3 UG/PG), 5 Highest scorers (2 x Y1 UG and 3 x Y3 UG/PG)

Distribution of attention on task instructions/ source text / own work

% of fixations for	Task instructions	Source texts	Own work	Other
Low (n5)	5%	38% text, 3% diagrams	47%	7%
High (n5)	5%	37% text, 4% diagrams	47%	7%



Distribution of attention according to sentence relevance (per word)

% of fixations per word	Less relevant	Relevant	Highly relevant	Pearson's correlation
Low (n5)	29%	34%	36%	r=.165 (low)
High (n5)	27%	32%	40%	r=.411(moderate)

Patterns of reading

% of fixations on written source texts	Careful	Selective
Low (n5)	29%	71%
High (n5)	23%	77%

Differences between high and low scorers

A difference in task representation

Three of the five high scoring participants mentioned using the **task instructions to guide their selection of information/ ideas from the source texts**. None of the low scoring participants mentioned this.

High scorers reported using the task to **create a macro-plan that guided their search for and selection of information** from the text.

In the questionnaire, the low scoring participants rated the importance of “using information from my memory” as 3 (on a likert scale of 1-5) compared to 1.2 by the high scorers.

A different approach to editing their written work

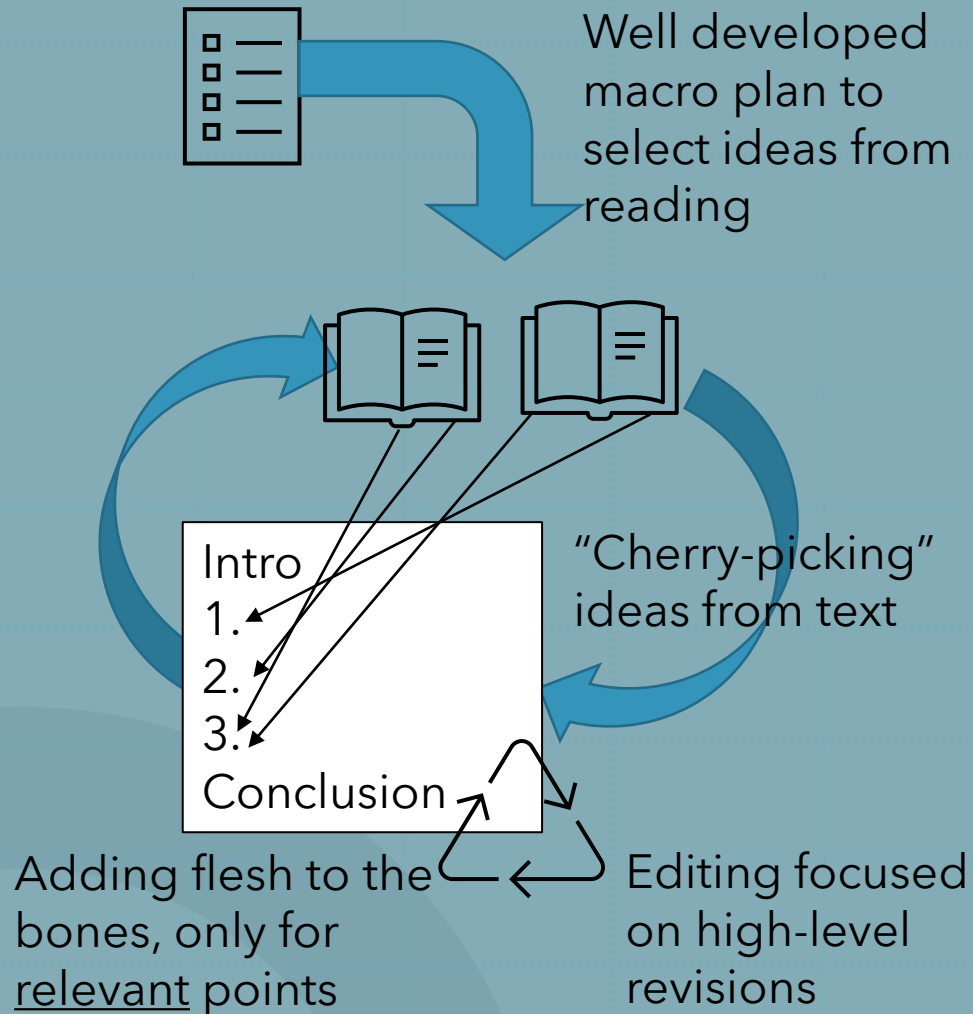
Whilst both groups spent the same amount of time looking at their own work, the high scorers made more comments about **high level revisions** (22% v 15% for the low scorers). In contrast most low scorers' remarks concerned their **paraphrasing**.

To summarise the key findings

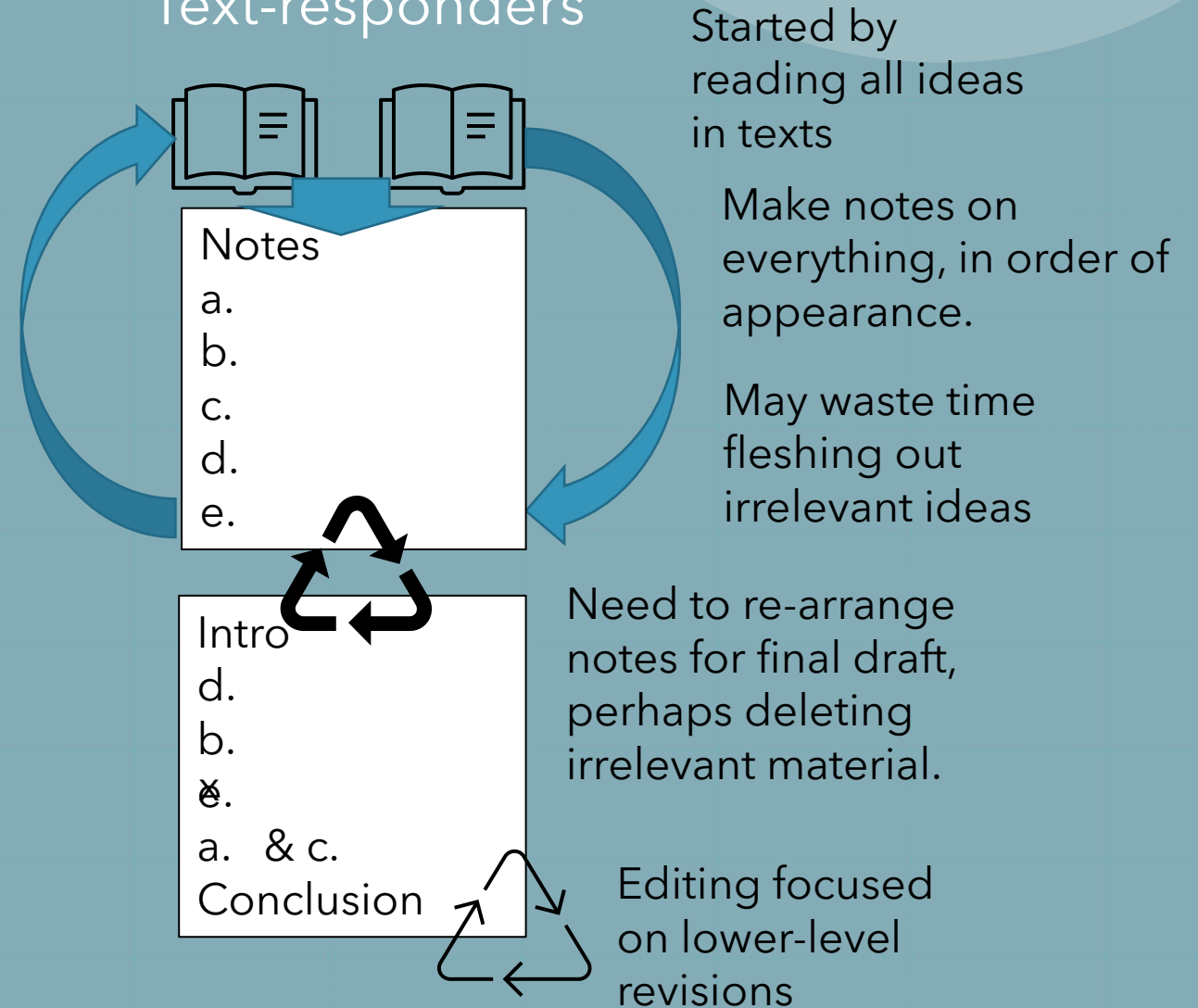
- Clear task representation and early planning influenced participants approach to reading
- Selective reading skills such as skimming, scanning and searching accounted for 70% of the reading on the written source texts. Careful reading (a slow, methodical pursuit of the text) accounted for about 30%. For high scorers selective reading rose to 77%.
- More experienced writers focused more on high level revisions.
- Identifying the most relevant parts of the text seems to be critical to task achievement.

Conclusions about the role of task representation

Macro planners



Text-responders



Implications for teaching and testing

- Students may need practice in developing clear **task representations**, situated in the wider expectations of their academic field, and practice translating those representations into reading and writing goals.
- Planning academic writing also involves **setting reading goals**. These can help students assess relevance and make connections between texts. This is more likely to lead to **knowledge transformation** rather than just **knowledge telling** (Bereiter and Scardamalia, 1987)
- Meeting reading goals relies on **utilising selective reading skills**, (such as reading for gist, search reading and scanning) **in a targeted and purposeful way**.
- Including **tasks aimed at selective reading skills** in academic English tests and EAP courses is likely to have positive washback in terms of students' preparedness to engage in academic reading-into-writing tasks.

Limitations

- Task was very short compared to most coursework assignments; this task may not have elicited the full range of cognitive processes
- The reading texts were pre-selected which does not represent real-world circumstances; balance of types of reading may change (but I would suggest that even more selective reading is needed!)
- Task may not have stretched participant sufficiently -scores on the task were quite homogeneous (Max score 9, no one scored less than 5)
- Limited number of participants
- Eye-movements can only suggest cognitive processes
- On-screen reading may differ from paper-based reading

References

Bereiter, C. and Scardamalia, M. (1987) *The psychology of written composition*. Lawrence Erlbaum Associates Hillsdale, NJ.

Chan, S.H.C. (2013) *Establishing the validity of reading-into-writing test tasks for the UK academic context*. Doctor of Philosophy. University of Bedfordshire.

Khalifa, H. and Weir, C.J. (2009) *Examining Reading: Research and practice in assessing second language reading*. Studies in Language Testing 29. Cambridge University Press: Cambridge.

Holmqvist, K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H. and Van de Weijer, J. (2011) *Eye tracking: A comprehensive guide to methods and measures*. OUP Oxford.

Rayner, K., Juhasz, B.J. and Pollatsek, A. (2005) 'Eye movements during reading', *The science of reading: A handbook*, pp. 79-97.

Rayner, K. and Pollatsek, A. (1989) *The Psychology of Reading*. Englewood Cliffs, NJ: Prentice Hall.

Rayner, K., Pollatsek, A., Ashby, J. and Clifton Jr, C. (2012) *Psychology of reading*. Psychology Press.

Starr, M.S. and Rayner, K. (2001) 'Eye movements during reading: Some current controversies', *Trends in cognitive sciences*, 5(4), pp. 156-163.

Wolfersberger, M.A., 2008. Second language writing from sources: An ethnographic study of an argument essay task (Doctoral dissertation, ResearchSpace@ Auckland).